

CLAIMS

1. A paclitaxel composition for the treatment of bladder tumor via intravesical administration, comprising 4 ~ 90 % by weight of at least one monoglyceride compound, 0.01 ~ 90 % by weight of at least one oil, 0.01 ~ 90 % by weight of at least one emulsifier and 0.01 ~ 20 % by weight of paclitaxel.
2. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 1, wherein said monoglyceride is selected from a group consisting of saturated or unsaturated monoglyceride compounds having 10 ~ 22 carbon atoms in the hydrocarbon chain.
3. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 2, wherein said monoglyceride compound is selected from monoolein, monopalmitolein, monomyristolein, monoelaidin, and monoerucin, or from a group consisting of the mixture of monoglycerides semi-synthesized from triglycerides of vegetable or animal oil.
4. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 1, wherein said oil is selected from a group consisting of triglyceride, iodized oil, vegetable oil and animal oil.
5. The paclitaxel composition for the treatment of bladder tumor via

intravesical administration according to Claim 4, wherein said triglyceride is selected from a group consisting of saturated and unsaturated triglycerides having 2 ~ 20 carbon atoms in each hydrocarbon chain.

- 5 6. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 5, wherein said triglyceride is selected from a group consisting of triacetin, tributyrin, tricaproin, tricaprylin, tricaprin and triolein.
- 10 7. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 4, wherein said iodized oil is selected from a group consisting of Lipiodol, iodized poppy seed oil, Ethiodol and iodized soybean oil.
- 15 8. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 4, wherein said vegetable oil is selected from a group consisting of soybean oil, cottonseed oil, olive oil, poppyseed oil, linseed oil and sesame oil.
- 20 9. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 4, wherein said animal oil is selected from a group consisting of squalane and squalene.
- 20 10. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 1, wherein said emulsifier is selected from a phospholipid, a non-ionic surfactant, an anionic surfactant, a cationic surfactant and bile acid.

11. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 10, wherein said phospholipid is selected from the group consisting of a phosphatidylcholine (PC) and its derivative, a
5 phosphatidylethanolamine (PE) and its derivative, a phosphatidylserine (PS) and its derivative, and a polymeric lipid wherein a hydrophilic polymer is conjugated to the lipid headgroup.
12. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 10, wherein said
10 non-ionic surfactant is selected from the group consisting of a poloxamer (Pluronic: polyoxyethylene-polyoxypropylene copolymer), a sorbitan ester (sorbitan esters; Span), a polyoxyethylene sorbitan (Tween) and a polyoxyethylene ether (Brij).
13. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 10, wherein said
15 anionic surfactant is selected from the group consisting of a phosphatidylserine (PS) and its derivative, a phosphatidic acid (PA) and its derivative and sodium dodecyl sulfate (SDS).
14. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 10, wherein said
20 cationic surfactant is selected from the group consisting of 1,2-dioleoyl-3-trimethylammonium propane (DOTAP), dimethyldioctadecylammonium bromide (DDAB), N-[1-(1,2-dioleoyloxy)propyl]-N,N,N-trimethylammonium chloride

(DOTMA), 1,2-dioleoyl-3-ethylphosphocholic acid (DOEPC) and 3 β -[N-[(N',N'-dimethylamino)ethan]carbonyl]cholesterol (DC-Chol).

15. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 10, wherein said bile
5 acid is selected from the group consisting of cholic acid, its salt and derivatives; deoxycholic acid, its salt and derivatives; chenocholic acid, its salt and derivatives; and lithocholic acid, its salt and derivatives.

16. The paclitaxel composition for the treatment of bladder tumor via
10 intravesical administration according to Claim 1, additionally comprising 0.01 ~ 5 % by weight of other additives.

17. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 16, wherein said other
15 additives are selected from the group consisting of Cremophor, tocopherol, tocopherol acetate, fatty acids, fatty acid esters, fatty acid alcohols, insoluble drugs, alcohols and polyols.

18. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 17, wherein said
20 insoluble drugs are selected from the group consisting of anticancer drugs, p-glycoprotein inhibitors and hepatic metabolism blockers.

19. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 18, wherein said
anticancer drugs are selected from the group consisting of

doxorubicin, cisplatin, carboplatin, carmustin (BCNU), dacarbazine, etoposide, 5-fluorouracil and paclitaxel derivatives.

20. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 19, wherein said
5 paclitaxel derivatives are selected from the group consisting of docetaxel, bromotaxel and taxotere.

21. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 18, wherein said
p-glycoprotein inhibitors are selected from the group consisting of
10 cinchonins, calcium channel blockers, calmodulin antagonists, Vinca alkaloids, antiarrhythmics, steroids, antihypertension drugs, anthelmintics and immunosuppressants.

22. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein said
15 calcium channel blockers are dihydropyridines selected from the group consisting of verapamil, nifedipine, nicardipine and nitrendipine.

23. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein calmodulin
20 antagonist is trifluoroperazine.

24. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein antihypertension drug is reserpine.

25. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein Vinca alkaloids are selected from the group consisting of vincristine and vinblastine.
- 5 26. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein steroid is progesterone.
27. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein said
10 antiarrhythmics are selected from the group consisting of amiodarone and quinidine.
28. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein said
15 anthelmintics are selected from the group consisting of quinacrine and quinine.
29. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 21, wherein said immunosuppressants are selected from the group consisting of cyclosporins, staurosporin and tacrolimus.
- 20 30. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 18, wherein said hepatic metabolism blockers are selected from the group consisting of anticancer drugs including cyclosporin A, doxorubicin, etoposide

(VP-16) and cisplatin; verapamil; and tamoxifen.

31. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 17, wherein said alcohols are selected from the group consisting of methanol, ethanol, propanol and isopropanol.
32. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 17, wherein said polyols are selected from the group consisting of ethyleneglycol, propyleneglycol and polyethyleneglycol.
33. A method of preparing the paclitaxel composition for the treatment of bladder tumor via intravesical administration according to any one of Claims 1 through 32, wherein said method comprises the steps of:
- 1) preparing the viscous liquid by mixing 4 ~ 90% by weight of at least one monoglyceride compound, 0.01 ~ 90 % by weight of at least one oil and 0.01 ~ 90 % by weight of at least one emulsifier at temperatures lower than 50 °C (step 1); and
 - 2) preparing homogeneous mixture by solubilizing completely 0.01 ~ 20 % by weight of paclitaxel in said mixture in step (1) (step 2).
34. The method of preparing the paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 33, wherein the said mixture is heated to 50 °C in step (1) to speed up the solubilization process.

35. The method of preparing the paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 33, wherein the said mixture is heated to 50 °C or sonicated in a bath type sonicator in step (2) to speed up the solubilization process.
- 5 36. A method of preparing the paclitaxel composition for the treatment of bladder tumor via intravesical administration according to any one of Claims 1 through 32, wherein said method comprises the steps of:
- 10 1) preparing the paclitaxel solution by solubilizing 0.01 ~ 20% by weight of paclitaxel in 0.01 ~ 90 % by weight of at least one oil by sonicating in a bath type sonicator (step 1); and
- 2) preparing homogeneous mixture by mixing the paclitaxel solution in step (1) and 0.01 ~ 90 % by weight of at least one emulsifier and 4 ~ 90 % by weight of monoglyceride (step 2).
- 15 37. The method of preparing the paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 36, wherein the said mixture is heated to 50 °C and sonicated in a bath type sonicator in step (2) to speed up the solubilization process.
- 20 38. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to any one of Claims 1 through 32, wherein said composition is administered intravesically after transurethral resection to treat superficial or invasive bladder tumor.
39. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to any one of Claims 1 through

32, wherein said composition is allowed to stay at least 2 hours after intravesical administration of 10 ~ 100 ml through the urethral catheter after reducing the amount of urine to or less than 10 ml.

5 40. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 39, wherein the method of controlling the production rate of urine to 1 ml/min or less additionally employed.

10 41. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 39, wherein said composition is administered intravesically more than one time.

42. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to Claim 39, wherein said composition is administered intravesically for more than 6 weeks.

15 ~~43~~ 42. The paclitaxel composition for the treatment of bladder tumor via intravesical administration according to any one of Claims 1 through 32, wherein said bladder tumor is Ta, T1 or Tis.